

BEFORE THE UNITED STATES FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR PRELIMINARY PERMIT

Fitler Bend Hydrokinetic Energy Project, FERC Project No. _____

The Chemical Market Analysis & Consulting Company, LLC (C-MACC)

1160 Dairy Ashford Road, Suite 609

Houston, TX 77079

August 2022

PRELIMINARY PERMIT APPLICATION
FOR THE
Fitler Bend Hydrokinetic Energy Project

A. Initial Statement

1. Statement of Application

The Chemical Market Analysis & Consulting Company, LLC applies to the Federal Energy Regulatory Commission for a preliminary permit for the proposed Fitler Bend Hydrokinetic Energy Project, as described in the attached exhibits. This application is made so that the applicant may secure and maintain the priority of application for a license for the project under Part I of the Federal Power Act while obtaining the data and performing the acts required to determine the project's feasibility and support an application for a license.

2. Project Location

State(s):	Mississippi, Louisiana
County/Parish:	Issaquena County, MS; East Carroll Parish, LA
Nearest Town:	Fitler, MS
Water Body:	Mississippi River

The coordinates of the requested permit area are provided below. Project coordinates use the WGS84 datum. Refer to items #7-9 in this initial statement for a detailed illustration of the project area and the location of the referenced coordinates. The project will involve installations of multiple units spaced no less than 15 feet apart in the areas of this reach where site conditions, depth, and needed infrastructure are suitable. There will be no consumptive or otherwise preemptive use of water resources.

The project area has the following coordinates (WGS84):

Upstream Right Bank

32 48 02.66N 91 09 31.08W

Downstream Right Bank

32 41 09.70N 91 04 42.95W

Upstream Left Bank

32 47 55.08N 91 08 18.66W

Downstream Left Bank

32 40 47.90N 91 04 23.42W

3. Name, business address, and telephone number of applicant

The Chemical Market Analysis & Consulting Company (C-MACC)
1160 Dairy Ashford Road, Suite 609
Houston, TX 77079

Name, business address, and telephone of each person authorized to act as an agent:

Cooley May
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4. Preference under section 7(a) of the Federal Power Act

The Chemical Market Analysis & Consulting Company, LLC (C-MACC) is a domestic limited liability company and is not claiming preference under Section 7(a) of the Federal Power Act.

5. Term of Permit

The proposed term of the requested permit is 36 months

6. Existing Dams or Other Project Facilities

There are no existing dams or other project facilities that will be part of the proposed project

7. The Chemical Market Analysis & Consulting Company, LLC is the only entity that has or intends to obtain and will maintain any proprietary rights necessary to construct, operate, or maintain the proposed property.

8. Municipal Information

The proposed project would use no federal facilities. The area proposed is located within one county:

- Issaquena County, MS
PO Box 27 or 132 Court Street
Mayersville, MS 39113
- East Carroll Parish, LA
PO Box 246 or 400 First Street
Lake Providence, LA 71254

9. Cities or towns where the project will be located:

- Fitler, MS
c/o Issaquena County, MS
PO Box 27 or 132 Court Street
Mayersville, MS 39113

Following are towns (or census designated places, CDPs) with a population of more than 5,000 people, according to the 2000 census, located within 15 miles of the project: There are no cities or towns with a population of 5,000 or more where the project will be located.

10. No federal facilities would be used by or otherwise associated with the proposed project. There are no irrigation or drainage districts associated with the proposed project. The following special purpose political subdivision is known to exist within the proposed boundary:

- a. Mississippi Levee Board, 2283 Highway 82 West, Greenville, MS 38701
- b. Congressional District #2, Mississippi; Bennie Thompson
- c. Fifth Louisiana Levee District, 102 Burnside Dr. Tallulah, LA 71282
- d. Congressional District #5, Louisiana; Julie Letlow

11. No Indian Tribe is located within the project boundary, and no Indian Tribe is expected to be affected by the project. No Indian Tribes were identified by the National Park Service's Native American Consultation Database as having interests in East Carroll Parish, LA, and Issaquena County, MS. The Chemical Market Analysis & Consulting Company, LLC will consult with all agencies and organizations with regulatory authority over the water, land, and resources of the proposed project area during the evaluation of project feasibility.

EXHIBIT 1 – PROJECT DESCRIPTION

1. Project Configuration

The proposed project consists of up to 2,000 units configured in a series of turbine arrays, which will be grouped to form turbine fields. The exact configuration of each array and field will depend upon channel topography, river depth, flow characteristics, and existing underwater infrastructure. Each turbine unit weighs approximately 3,000 pounds and will have an approximate footprint, excluding the mooring cables and pilings, of 3.5 meters by 4.5 meters. The footprint of each array, is expected to be about 12 meters by 15 meters. However, a multiple-device plant enables the sharing of anchors and mooring cables and, therefore, significantly reduces this footprint even further, perhaps by as much as half, depending on local channel conditions. Depending on the most efficient array design, the arrays could be positioned between 5 and 15 meters apart in a staggered configuration to form the turbine fields, depending on the most efficient array design. Each array structure proposed would be moored using freestanding pilings, a floating barge, a pontoon-like platform, or attached to existing shore infrastructure such as dock pilings. It will depend upon the most efficient configuration.

The electric connections to each array will be via cables connecting the arrays within the field and transmitting the turbine field's generation to shore stations. As required, shore stations will be distributed along the riverbank at intervals depending upon the channel characteristics and velocity profile. Each shore station will consist of a small building (<100 square meters) with power conditioning and control equipment and transition the cabling to the sub-stations, planned transmission lines, or a potential industrial manufacturer, who will utilize the power for operations in the area.

The major structural and functional components of the system include:

- **The turbine generator units:** The most likely turbine-generator will be based on a rotating turbine blade assembly with an integral generator rotor. The turbine measures 3-4 meters in diameter and has an overall length of 4.5-5.5 meters, including its ducting shrouds. The device will likely use oil-less hydrodynamic bearings to achieve a low-maintenance unit that does not have the typical problems of underwater rotating machinery such as failure of gearboxes and contamination of bearings or leakage of lubricating materials into the environment. The device will also likely have the option of an induction type generator or a permanent magnet generator when there are large variations in river velocity. Each motor's passive or active magnetic material is mounted to the rotating turbine and energizes the stationary generator coils to produce power. Both of these motor types are well developed for generator applications. The device will likely be constructed largely from a plastic and composite materials, such as epoxy resin with fiberglass or Kevlar reinforcement, though multiple designs are being considered.

- **The mooring system:** The turbines will be designed to be able to be installed in a number of different configurations, depending on local site conditions. A basic 3 meter diameter device would be installed in groups ("arrays") and adapted to account for the local river flow, river bed and shoreline, and shore infrastructure conditions. A typical array configuration comprises a group of six devices, two wide and three high, attached either to stand-alone pilings at the river bottom, existing pilings, or to floating structures secured at the river bottom and shore. The devices will be connected to the mooring system, which allows them to be raised to the surface for periodic maintenance.
- **The shore station:** Each turbine field will connect to a shore station. The shore station will likely consist of a masonry building above the high water mark along the riverbank. The purpose of the shore station is to consolidate and transition the submersible cables to project feeder lines and to provide an indoor protective structure to contain power conditioning equipment, protective relaying, control, and communications equipment. A shore station will likely include a substation built in where they will interconnect.

The project site was selected based on the following criteria:

- **Water Velocity:** The turbine can operate at flows of 1.5 meters per second and greater, although power generation is much more efficient at higher flow rates. The applicant believes this section of the Mississippi River has minimum flows to meet the minimum operational requirements for most units consistently and will allow efficient use of the installed generating equipment. If the feasibility study supports this hypothesis, the units will continuously operate under almost all flow conditions.
- **Water Depth:** Depth was considered in order to avoid conflicts with conventional uses of the waterway. This stretch of the Mississippi River provides sufficient depth for commercial deployment. The units themselves are relatively small compared to the waterway's profile, and alternative deployment configurations can be used to address depth restraints.

2. Reservoirs

There are no reservoirs required for this project

3. Transmission Lines

The applicant expects to install lines interconnecting the shore stations and potential industrial consumers of the power as needed. If the project can be fully developed as proposed, on-shore infrastructure would be necessary as required along the border of the project boundary. The interconnection will occur at the shore station, with each estimated at a capacity of 34.6kv. The frequency of on-shore facilities will vary with the exact placement of the turbine fields as it is used to gather the project's generation from various shore-based power equipment. Before filing the license application, infrastructure elements will be more fully evaluated in developing refined siting and build-out plans. The exact transmission cable routes will be determined based on the locations of the units, existing transmission infrastructure, and end-user locations.

4. Estimated Annual Energy Production

The turbine produces electricity by utilizing instream velocities of 1.5 meters per second or greater. One turbine with a diameter of approximately 3.5 meters is expected to have a nameplate of 750kW at 4.5 meters per second flow. The units will be installed in groups or matrices to the extent allowed by the waterway configuration. The initially estimated build-out total is up to 2,000 units at this time [based on 4-5 units per array, 15 meters apart over ~6.0 miles]. The total output of the site is estimated to be up to 1.5GWH or 1500MWH. With a 750kw per turbine and a 50% plant factor, then the annual average generation will be approximately 1.56 million MWH for the full build-out. The actual number of units will be determined on a site-specific basis, considering the need to co-exist with other uses of the area, including navigation. The configuration will be designed to avoid turbulence between the devices and allow access to maintenance vessels. The project's overall capacity is expected to be determined by research that identifies the best number of turbines and transmission lines to provide power while avoiding significant use conflicts and minimizing impacts to environmental resources. A refinement of the site will be done before the filing of the license application.

5. Lands of the United States

At this time, The Chemical Market Analysis and Consulting Company, LLC does not intend to include any lands owned by the United States in this project. Certain existing infrastructure along the river may be owned or managed by state, federal or local government entities, which could be used for the attachment of transmission lines or deployment of the units. If determined to be feasible, The Chemical Market Analysis and Consulting Company, LLC will discuss these options with the controlling entity.

6. Public Interest Benefits

The turbine generates power from natural river currents and is not dependent on fossil fuels. By some estimates, each turbine can displace up to 60 tons of carbon dioxide, 36 tons of coal, 130 barrels of oil, or 745,540 cubic feet of natural gas use. This form of energy production is emission-free with no adverse effects on air quality and minimal foreseeable adverse environmental effects overall. Unlike traditional hydropower, no dam or water diversion is needed, and the submerged deployment will have minimal adverse visual impacts.

EXHIBIT 2 – Description Of Proposed Studies

1. General Requirements

(i) Technical/Economical/Financial Studies

The Chemical Market Analysis & Consulting Company, LLC anticipates conducting the following analyses:

- Flow assessments;
- Geotechnical survey
- Collection of existing information on project area fish and wildlife populations, macroalgae, and submerged aquatic vegetation; and
- Interconnection survey

Following the issuance of the preliminary permit, The Chemical Market Analysis and Consulting Company, LLC will initiate a consultation with project area stakeholders and begin permitting and licensing the project. The Chemical Market Analysis and Consulting Company, LLC anticipates researching existing information further to characterize the project area's physical and biological resources and uses (e.g., commercial fishing, navigation, and recreation). As part of the FERC licensing process, The Chemical Market Analysis and Consulting Company, LLC will be consulting with local, state, and federal stakeholders to determine the type and scope of environmental studies to be completed.

The following is a proposed schedule for future project activities:

TASK	Schedule (After issuance of preliminary permit)
Initiate permitting	Immediately
Submit a more detailed schedule of activities to be carried out under permit and target dates for completion of activities	90 days
Refine Site, Develop Notice of Intent (NOI) and Preliminary Application Document (PAD)	18 months
Scoping	24 months
Environmental and interconnection studies	36 months
Conduct economic and financial feasibility analysis	36 months
File license application	48 months
Initial unit deployment and testing	Following license issuance

(ii) Need for new Roads

There are no new roads needed under this permit.

2. Dam construction

The work plan does not call for new dam construction because a dam is not required

3. Waiver

No waiver is being sought for the evaluation and testing of the feasibility of the project

EXHIBIT 3 – Statement of Costs & Financing

The estimated cost for planning and executing the studies, investigations, surveys, and other related information-gathering efforts required for the proposed project is approximately \$800,000 to \$1,250,000. The Chemical Market Analysis and Consulting Company, LLC intends to leverage studies and site-specific diligence from related clean-energy projects to potentially reduce this cost estimation.

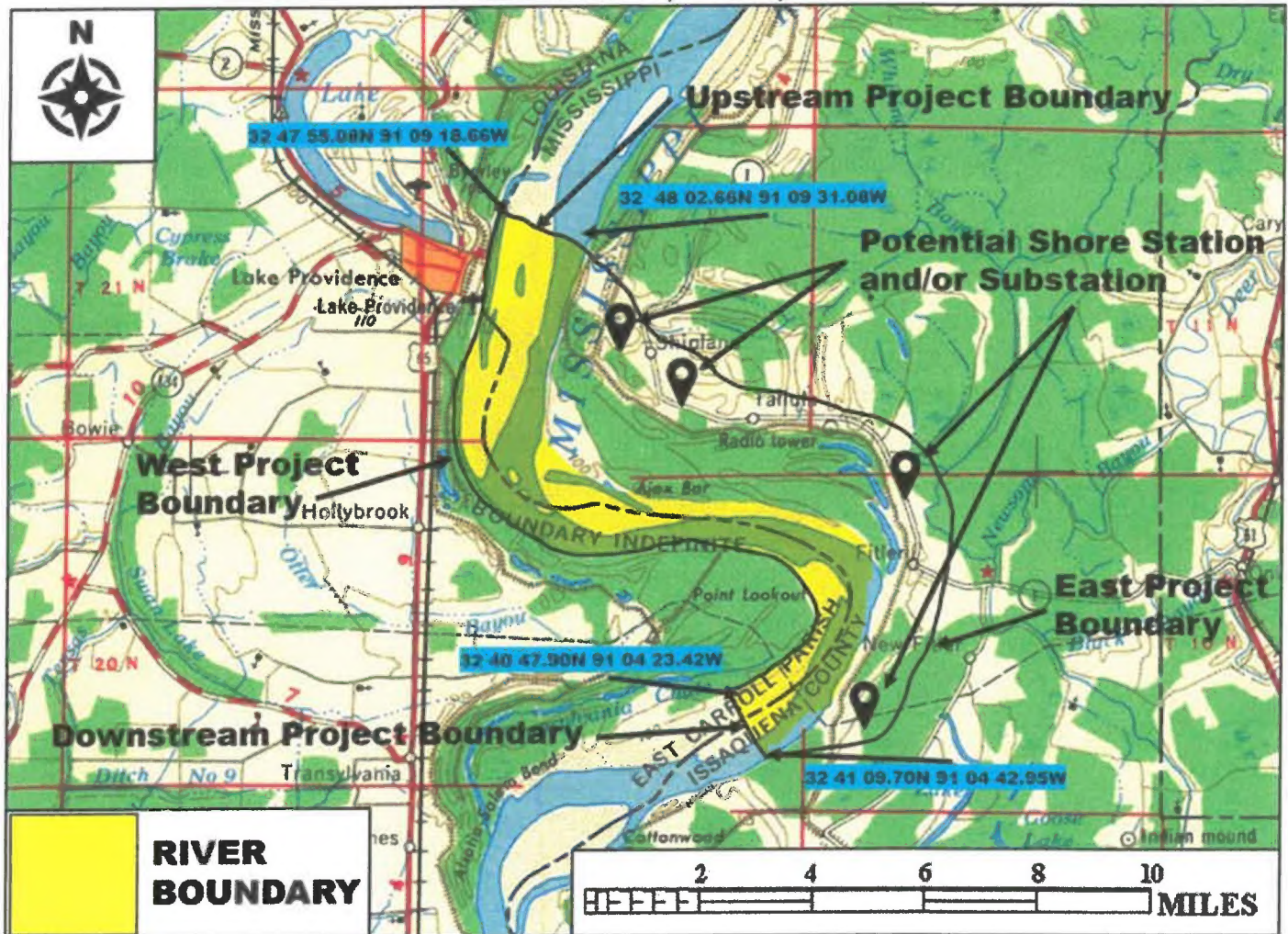
At this time, The Chemical Market Analysis and Consulting Company, LLC expects to partially or fully fund the cost to carry out or prepare the studies, investigations, tests, surveys, maps, plans, or specifications. The Chemical Market Analysis and Consulting Company, LLC further intends to investigate possible partial funding sources from future partners and appropriate federal, state, and local organizations.

Following issuance of the preliminary permit, The Chemical Market Analysis and Consulting Company, LLC will conduct an interconnection survey and evaluate potential Power Purchase Agreements with commercial facilities in the Project area and utilities. There will also be a thorough review of industrial companies interested in constructing manufacturing operations in Issaquena county to source power from the Fitler Bend site.

EXHIBIT 4 – Project Map

A general map of the proposed project area follows. The proposed project area does not include any areas designated as or being considered for inclusion in the National Wild and Scenic Rivers System. The proposed project area does not include any areas designated as or recommended for designation as a wilderness area or wilderness study area under the Wilderness Act. The project area comprises the Mississippi side of the Mississippi River, as shown below.

Fitler Bend Project Map



Verification Statement

This application for a preliminary permit for the Fittler Bend Hydrokinetic Energy project is executed in the state of Texas, County of Harris.

Cooley May, as agent for The Chemical Market Analysis and Consulting Company, LLC, being duly sworn, deposes and says that the contents of this Preliminary Permit Application are true to the best of his knowledge or belief. The undersigned applicant signed the application this Thursday, August 11, 2022.

By: _____

Cooley May

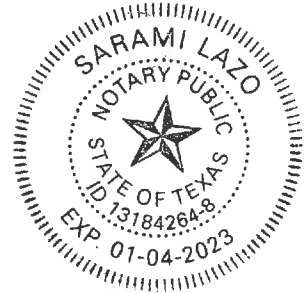
Subscribed and sworn before me, a Notary Public of the state of Texas this Thursday, August 11, 2022.

My commission expires on _____

01/04/2023

By: _____

Sarami Lazo



Document Content(s)

Fitler Bend Hydrokinetic Energy Project.pdf.....1